

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Todd et. al.
Serial No: 10/762,044
Filed: January 21, 2004
For: METHODS AND APPARATUS FOR MODIFYING A RETENTION
PERIOD FOR DATA IN A STORAGE SYSTEM
Confirmation No.: 4481

Examiner: Etienne Leroux
Art Unit: 2161

RESPONSE TO NOTICE OF NON-COMPLIANT APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

A Notification of Non-Compliant Appeal Brief was mailed in connection with this application on August 27, 2007 and alleged that the brief failed to comply with the requirements of 37 C.F.R. 41.37(c)(1)(v) relating to providing a mapping of the subject matter defined in each of the dependent claims argued separately in the Appeal to the specification. This is the sole basis on which the Appeal Brief was alleged to be defective. MPEP §1205.03 indicates that when the sole alleged defect is due to the failure to provide a summary of the claimed subject matter as required by 37 CFR 41.37(c)(1)(v), an entire new brief need not and should not be filed, but rather a paper providing a summary as required will suffice.

Therefore, the following replacement "Summary of Claimed Subject Matter" is being submitted in response to the Notification of Non-Compliant Appeal Brief, and provides a summary as required by 37 CFR 41.37(c)(1)(v).

SUMMARY OF CLAIMED SUBJECT MATTER

Appellants appreciated that it is often important for a business or institution to prevent records from being deleted or modified until a certain period of time has elapsed (specification, page 1, lines 15-17). Thus, one embodiment of the invention is directed to the use of a retention period that may be assigned to a unit of data stored on a storage system, and that specifies a period of time during which the storage system will not permit deletion of the unit of data (specification, page 15, lines 1-12). Thus, if a request to delete the unit of data is received before expiration of the retention period, the request is denied and the unit of data is not deleted.

Appellants also appreciated that in some situations, it may be desired to reduce the length of a previously defined retention period before that retention period expires (specification, page 20, lines 26-29). Such situations may arise, for example, when an event occurs that may obviate the need to retain the data for the entire length of a previously defined retention period. For example, the death of a medical patient may obviate the need to retain the patient's medical records (specification, page 20, line 29 - page 21, line 1).

Each of the independent claims on appeal relates to reducing a previously-defined retention period for a unit of data stored on a storage system, where the retention period defines a period during which the unit of data cannot be deleted. One group of the independent claims (i.e., claims 1, 20, and 39) relates to actions taken by the storage system in reducing the retention period of a unit of data stored thereon (e.g., receiving a request from a host to reduce the retention period for a unit of data and reducing the retention period in response to the request), and another (i.e., claims 58, 65, and 72) relates to actions taken by a host computer in reducing the retention period of a unit of data stored on a storage system (e.g., sending a request to the storage system to reduce the retention period and receiving a response indicating that the request was granted).

Figure 5 of the application (reproduced below) conceptually shows one embodiment of the invention in which the retention period for a unit of data may be reduced. In Figure 5, host 501 sends a request 503 to a storage system 505. The request 503 seeks to reduce a retention period for a unit of data 506 (the particular type of unit of data is referred to as a CDF) stored in the storage system 505 (specification, page 21, lines 11-14). The retention period is reduced in response, which permits the unit of data to be deleted prior to expiration of the longer retention period initially specified (specification, page 22, lines 13-19).

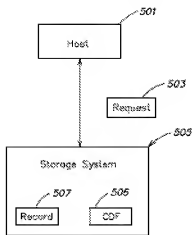


FIG. 5

A summary of each independent claim and each separately argued dependent claim, with citation to the specification, is provided below. The portions of the specification cited below are only examples of places in the specification that provide support for these claims, as other portions of the specification may provide additional support. Moreover, the cited portions of the specification are only examples of some embodiments of the invention, and the claims are not limited to these or any other specific example or embodiment.

In addition, the above discussion of embodiments of the invention is provided merely to assist the Board in appreciating various aspects of the present invention. However, not all of the description provided above necessarily applies to each of the independent claims pending in the application. Therefore, the Board is requested to not rely upon the foregoing summary in

interpreting any of the claims or in determining whether they patentably distinguish over the prior art of record.

Independent Claim 1

Claim 1 is directed to a method of processing data in a computer system comprising a host and at least one content addressable storage (CAS) system (specification, page 12, line 1 – page 13, line 5; Figure 1) wherein the host identifies units of data on the CAS system(s) using content addresses generated based, at least in part, on at least a portion of the content of the corresponding unit of data (specification, page 13, lines 18-27). The CAS system(s) store at least one unit of data having a previously-defined retention period during which the at least one unit of data cannot be deleted (specification, page 15, lines 1-12). The method comprises acts of: (A) receiving, at the at least one CAS system, a request from the at least one host to reduce a length of the retention period for the at least one unit of data (specification, page 21, lines 11-14; Figure 5); and (B) reducing the length of the retention period in response to the request (specification, page 22, lines 13-19).

Independent Claim 20

Claim 20 is directed to at least one computer readable medium encoded with instructions that, when executed on a computer system, perform a method of processing data (specification, page 39, lines 10-14) wherein the computer system comprises a host and at least one content addressable storage (CAS) system (specification, page 12, line 1 – page 13, line 5; Figure 1), wherein the at least one host identifies units of data on the CAS system(s) using content addresses each generated based, at least in part, on at least a portion of the content of the corresponding unit of data (specification, page 13, lines 18-27), the CAS system(s) store at least one unit of data having a previously-defined retention period during which the at least one unit of data cannot be deleted (specification, page 15, lines 1-12). The method comprises acts of: (A) receiving, at the at least one CAS system, a request from the at least one host to reduce a length of the retention period for the at least one unit of data (specification, page 21, lines 11-14; Figure 5); and (B) reducing the length of the retention period in response to the request (specification, page 22, lines 13-19).

Independent Claim 39

Claim 39 is directed to a storage system for use in a computer system including the storage system and at least one host, wherein the storage system is a content addressable storage (CAS) system (specification, page 12, line 1 – page 13, line 5; Figure 1), and wherein the at least one host identifies units of data on the at least one CAS system using content addresses generated based, at least in part, on at least a portion of the content of the corresponding unit of data (specification, page 13, lines 18-27). The storage system comprises: at least one storage device to store at least one unit of data that is received from the at least one host and has an associated retention period during which it cannot be deleted (specification, page 15, lines 1-12); and at least one controller that is adapted to: receive a request to reduce a length of the retention period for the at least one unit of data (specification, page 21, lines 11-14; Figure 5); and reduce the length of the retention period in response to the request (specification, page 22, lines 13-19).

Independent Claim 58

Claim 58 is directed to a method of processing data in a computer system comprising a host and at least one content addressable storage (CAS) system (specification, page 12, line 1 – page 13, line 5; Figure 1), wherein the host identifies units of data on the CAS system(s) using content addresses generated based, at least in part, on at least a portion of the content of the unit of data (specification, page 13, lines 18-27). The CAS system(s) store at least one unit of data having a previously-defined retention period during which the at least one unit of data cannot be deleted (specification, page 15, lines 1-12). The method comprises acts of: (A) sending, from the at least one host, a request to the CAS system(s) to reduce a length of the retention period for the at least one unit of data (specification, page 21, lines 11-14; Figure 5); and (B) receiving, from the CAS system(s), a response indicating that the request was granted (specification, page 22, lines 13-19).

Independent Claim 65

Claim 65 is directed to at least one computer readable medium encoded with instructions that, when executed on a computer system, perform a method of processing data (specification,

page 39, lines 10-14), wherein the computer system comprises a host and at least one content addressable storage (CAS) system (specification, page 12, line 1 – page 13, line 5; Figure 1), wherein the host identifies units of data on the CAS system(s) using content addresses generated based, at least in part, on at least a portion of the content of the corresponding unit of data (specification, page 13, lines 18-27). The CAS system(s) store at least one unit of data having a previously-defined retention period during which the at least one unit of data cannot be deleted (specification, page 15, lines 1-12). The method comprises acts of: (A) sending, from the at least one host, a request to the CAS system(s) to reduce a length of the retention period for the at least one unit of data (specification, page 21, lines 11-14; Figure 5); and (B) receiving a response indicating that the request was granted (specification, page 22, lines 13-19).

Independent Claim 72

Claim 72 is directed to a host computer for use in a computer system that includes the host computer and at least one CAS system (specification, page 12, line 1 – page 13, line 5; Figure 1), wherein the host identifies units of data on the CAS system(s) using content addresses generated based, at least in part, on at least a portion of the content of the corresponding unit of data (specification, page 13, lines 18-27). The CAS system(s) store, for the host, at least one unit of data having a previously-defined retention period during which the at least one unit of data cannot be deleted (specification, page 15, lines 1-12). The host computer comprises: at least one storage device; and at least one controller, coupled to the at least one storage device, that is adapted to send a request to the CAS system(s) to reduce a length of the retention period for the at least one unit of data (specification, page 21, lines 11-14; Figure 5) and receive, from the CAS system(s), a response indicating that the request was granted (specification, page 22, lines 13-19).

Dependent Claims

Claim 2

Claim 2 is directed to the method of claim 1, wherein the request for the at least one host to reduce a length of the retention period for the at least one data comprises an event command indicating the occurrence of an event (specification, page 35, lines 7-11).

Claim 3

Claim 3 is directed to the method of claim 2, wherein the event command does not specify the manner in which the retention period is to be reduced (specification, page 35, lines 21-25), and wherein the act of reducing the length of the retention period for the at least one unit of data in response to the request further comprises an act of determining the manner of reducing the retention period by referring to information stored within or accessible to the storage system (specification, page 35, lines 22-28).

Claim 4

Claim 4 is directed to the method of claim 1, wherein the request specifies that the retention period be reduced and the manner in which the length of the retention period is to be reduced (specification, page 22, lines 20-29).

Claim 5

Claim 5 is directed to the method of claim 1, wherein the at least one storage system stores a previously-defined retention period within the unit of data, and wherein the act of reducing the length of the retention period further comprises replacing the unit of data with a new unit of data having the reduced retention period (specification, page 33, lines 5-8).

Claim 6

Claim 6 is directed to the method of claim 1, wherein the at least one storage system stores the previously-defined retention period in a record outside of the unit of data, and wherein the act of reducing the length of the retention period further comprises modifying the record to reduce the previously-defined retention period (specification, page 22, lines 13-18).

Claim 7

Claim 7 is directed to the method of claim 1, wherein the at least one storage system is a content addressable storage system that is responsive to access requests from the at least one host that reference a content address for the unit of data that is generated based on the content of the unit of the data (specification, page 12, lines 31-32, page 13, lines 1-6).

Claim 8

Claim 8 is directed to the method of claim 7, wherein the content address of the unit of data is generated based on only a first portion of the content of the unit of data and not on a second portion of the content of the unit of data (specification, page 26, lines 1-12).

Claim 9

Claim 9 is directed to the method of claim 8, wherein the at least one storage system stores the previously-defined retention period in the second portion of the content unit of data on which generation of the content address is not based (specification, page 25, lines 30-32; page 26, line 1), and wherein the act of reducing the length of the retention period for the at least one unit of data further comprises an act of reducing the previously-defined retention period specified in the second portion of the content of the unit of data (specification, page 25, lines 30-32; page 26, line 1).

Claim 10

Claim 10 is directed to the method of claim 1, wherein the act of reducing the length of the retention period for the at least one unit of data further comprises acts of determining whether the previously-defined retention period for the unit of data is permitted to be reduced (specification, page 24, lines 9-11), and reducing the length of the previously-defined retention period only when the previously-defined retention period for the unit of data is permitted to be reduced (specification, page 24, lines 16-18).

Claim 11

Claim 11 is directed to the method of claim 10, wherein the act of determining whether the previously-defined retention period for the unit of data is permitted to be reduced further comprises determining whether at least one of the unit of data and the previously-defined retention period is within a class designated as capable of having the retention period reduced (specification, page 24, lines 15-22).

Claim 12

Claim 12 is directed to the method of claim 11, wherein the act of determining whether the previously-defined retention period for the unit of data is permitted to be reduced further comprises determining whether at least one of the unit of data and the previously-defined retention period is within the class designated as capable of having the retention period reduced by examining the previously-defined retention period (specification, page 32, lines 3-6).

Claim 13

Claim 13 is directed to the method of claim 11, wherein the act of determining whether the previously-defined retention period for the unit of data is permitted to be reduced further comprises determining whether at least one of the unit of data and the previously-defined retention period is within the class designated as capable of having the retention period reduced by examining a flag associated with the unit of data (specification, page 25, lines 8-14).

Claim 18

Claim 18 is directed to the method of claim 1, further comprising an act of maintaining on the storage system at least one record for the unit of data (specification, page 26, lines 14-16), the at least one record storing a history of the reduction of the previously-defined retention period (specification, page 26, lines 13-16).

Claim 19

Claim 19 is directed to the method of claim 18, further comprising acts of receiving, at the at least one storage system, a request from the at least one host to restore the retention period to the length of the previously-defined retention period for the at least one unit of data (specification, page 33, lines 26-30), and restoring the retention period to the length of the previously-defined retention period in response to the request (specification, page 33, lines 23-25).

Claim 21

Claim 21 is directed to the at least one computer readable medium of claim 20, wherein the request for the at least one host to reduce a length of the retention period for the at least one data comprises an event command indicating the occurrence of an event (specification, page 35, lines 7-11).

Claim 22

Claim 22 is directed to the at least one computer readable medium of claim 21, wherein the event command does not specify the manner in which the retention period is to be reduced (specification, page 35, lines 21-25), and wherein the act of reducing the length of the retention period for the at least one unit of data in response to the request further comprises an act of determining the manner of reducing the retention period by referring to information stored within or accessible to the storage system (specification, page 35, lines 22-28).

Claim 23

Claim 23 is directed to the at least one computer readable medium of claim 20, wherein the request specifies that the retention period be reduced and the manner in which the length of the retention period is to be reduced (specification, page 22, lines 20-29).

Claim 24

Claim 24 is directed to the at least one computer readable medium of claim 20, wherein the at least one storage system stores a previously-defined retention period within the unit of data, and wherein the act of reducing the length of the retention period further comprises replacing the unit of data with a new unit of data having the reduced retention period (specification, page 33, lines 5-8).

Claim 25

Claim 25 is directed to the at least one computer readable medium of claim 20, wherein the at least one storage system stores the previously-defined retention period in a record outside of the unit of data, and wherein the act of reducing the length of the retention period further

comprises modifying the record to reduce the previously-defined retention period (specification, page 22, lines 13-18).

Claim 26

Claim 26 is directed to the at least one computer readable medium of claim 20, wherein the at least one storage system is a content addressable storage system that is responsive to access requests from the at least one host that reference a content address for the unit of data that is generated based on the content of the unit of the data (specification, page 12, lines 31-32, page 13, lines 1-6).

Claim 27

Claim 27 is directed to the at least one computer readable medium of claim 26, wherein the content address of the unit of data is generated based on only a first portion of the content of the unit of data and not on a second portion of the content of the unit of data (specification, page 26, lines 1-12).

Claim 28

Claim 28 is directed to the at least one computer readable medium of claim 27, wherein the at least one storage system stores the previously-defined retention period in the second portion of the content unit of data on which generation of the content address is not based (specification, page 25, lines 30-32; page 26, line 1), and wherein the act of reducing the length of the retention period for the at least one unit of data further comprises an act of reducing the previously-defined retention period specified in the second portion of the content of the unit of data (specification, page 25, lines 30-32; page 26, line 1).

Claim 29

Claim 29 is directed to the at least one computer readable medium of claim 20, wherein the act of reducing the length of the retention period for the at least one unit of data further comprises acts of determining whether the previously-defined retention period for the unit of data is permitted to be reduced (specification, page 24, lines 9-11), and reducing the length of the

previously-defined retention period only when the previously-defined retention period for the unit of data is permitted to be reduced (specification, page 24, lines 16-18).

Claim 30

Claim 30 is directed to the at least one computer readable medium of claim 29, wherein the act of determining whether the previously-defined retention period for the unit of data is permitted to be reduced further comprises determining whether at least one of the unit of data and the previously-defined retention period is within a class designated as capable of having the retention period reduced (specification, page 24, lines 15-22).

Claim 31

Claim 31 is directed to the at least one computer readable medium of claim 30, wherein the act of determining whether the previously-defined retention period for the unit of data is permitted to be reduced further comprises determining whether at least one of the unit of data and the previously-defined retention period is within the class designated as capable of having the retention period reduced by examining the previously-defined retention period (specification, page 32, lines 3-6).

Claim 32

Claim 32 is directed to the at least one computer readable medium of claim 30, wherein the act of determining whether the previously-defined retention period for the unit of data is permitted to be reduced further comprises determining whether at least one of the unit of data and the previously-defined retention period is within the class designated as capable of having the retention period reduced by examining a flag associated with the unit of data (specification, page 25, lines 8-14).

Claim 37

Claim 37 is directed to the at least one computer readable medium of claim 20, further comprising an act of maintaining on the storage system at least one record for the unit of data

(specification, page 26, lines 14-16), the at least one record storing a history of the reduction of the previously-defined retention period (specification, page 26, lines 13-16).

Claim 38

Claim 38 is directed to the at least one computer readable medium of claim 37, further comprising acts of receiving, at the at least one storage system, a request from the at least one host to restore the retention period to the length of the previously-defined retention period for the at least one unit of data (specification, page 33, lines 26-30), and restoring the retention period to the length of the previously-defined retention period in response to the request (specification, page 33, lines 23-25).

Claim 40

Claim 40 is directed to the storage system of claim 39, wherein the request for the at least one host to reduce a length of the retention period for the at least one data comprises an event command indicating the occurrence of an event (specification, page 35, lines 7-11).

Claim 41

Claim 41 is directed to the storage system of claim 40, wherein the event command does not specify the manner in which the retention period is to be reduced (specification, page 35, lines 21-25), and wherein the at least one controller is adapted to determine the manner of reducing the retention period by referring to information stored within or accessible to the storage system (specification, page 35, lines 22-28).

Claim 42

Claim 42 is directed to the storage system of claim 39, wherein the request specifies that the retention period be reduced and the manner in which the length of the retention period is to be reduced (specification, page 22, lines 20-29).

Claim 43

Claim 43 is directed to the storage system of claim 39, wherein the at least one storage system stores a previously-defined retention period within the unit of data, and wherein the at least one controller is adapted to replace the unit of data with a new unit of data having the reduced retention period (specification, page 33, lines 5-8).

Claim 44

Claim 44 is directed to the storage system of claim 39, wherein the at least one storage system stores the previously-defined retention period in a record outside of the unit of data, and wherein the at least one controller is adapted to modify the record to reduce the previously-defined retention period (specification, page 22, lines 13-18).

Claim 45

Claim 45 is directed to the storage system of claim 39, wherein the at least one storage system is a content addressable storage system that is responsive to access requests from the at least one host that reference a content address for the unit of data that is generated based on the content of the unit of the data (specification, page 12, lines 31-32, page 13, lines 1-6).

Claim 46

Claim 46 is directed to the storage system of claim 45, wherein the content address of the unit of data is generated based on only a first portion of the content of the unit of data and not on a second portion of the content of the unit of data (specification, page 26, lines 1-12).

Claim 47

Claim 47 is directed to the storage system of claim 46, wherein the at least one storage system stores the previously-defined retention period in the second portion of the content unit of data on which generation of the content address is not based (specification, page 25, lines 30-32; page 26, line 1), and wherein the at least one controller is adapted to reduce the retention period specified in the second portion of the content of the unit of data (specification, page 25, lines 30-32; page 26, line 1).

Claim 48

Claim 48 is directed to the storage system of claim 39, wherein the at least one controller is adapted to determine whether the previously-defined retention period for the unit of data is permitted to be reduced (specification, page 24, lines 9-11), and reduce the retention period only when the retention period for the unit of data is permitted to be reduced (specification, page 24, lines 16-18).

Claim 49

Claim 49 is directed to the storage system of claim 48, wherein the at least one controller is adapted to determine whether at least one of the unit of data and the retention period is within a class designated as capable of having the retention period reduced (specification, page 24, lines 15-22).

Claim 50

Claim 50 is directed to the storage system of claim 49, wherein the at least one controller is adapted to determine whether the at least one of the unit of data and the retention period is within the class designated as capable of having the retention period reduced by examining the retention period (specification, page 32, lines 3-6).

Claim 51

Claim 51 is directed to the storage system of claim 49, wherein the at least one controller is adapted to determine whether the at least one of the unit of data and the retention period is within the class designated as capable of having the retention period reduced by examining a flag associated with the unit of data (specification, page 25, lines 8-14).

Claim 56

Claim 56 is directed to the storage system of claim 39, wherein the at least one controller is adapted to maintain on the storage system at least one record for the unit of data (specification,

page 26, lines 14-16), the at least one record storing a history of the reduction of the previously-defined retention period (specification, page 26, lines 13-16).

Claim 57

Claim 57 is directed to the storage system of claim 56, wherein the at least one controller is adapted to receive, at the at least one storage system, a request from the at least one host to restore the retention period to a previously-defined length for the at least one unit of data (specification, page 33, lines 26-30), and restore the retention period to the previously-defined retention period length in response to the request (specification, page 33, lines 23-25).

Claim 60

Claim 60 is directed to the method of claim 58, wherein the request for the at least one host to reduce a length of the retention period for the at least one data comprises an event command indicating the occurrence of an event (specification, page 35, lines 7-11).

Claim 62

Claim 62 is directed to the method of claim 58, wherein the request specifies that the retention period be reduced and the manner in which the length of the retention period is to be reduced (specification, page 22, lines 20-29).

Claim 63

Claim 63 is directed to the method of claim 58, wherein the at least one host accesses the unit of data stored on the at least one storage system using a content address generated based on the content of the unit of data (specification, page 12, lines 31-32, page 13, lines 1-6).

Claim 64

Claim 64 is directed to the method of claim 58, further comprising an act of sending, from the at least one host, a second request to the at least one storage system to restore the retention period to the length of the previously-defined retention period for the at least one unit of data (specification, page 33, lines 26-30).

Claim 67

Claim 67 is directed to the at least one computer readable medium of claim 65, wherein the request for the at least one host to reduce a length of the retention period for the at least one data comprises an event command indicating the occurrence of an event (specification, page 35, lines 7-11).

Claim 69

Claim 69 is directed to the at least one computer readable medium of claim 65, wherein the request specifies that the retention period be reduced and the manner in which the length of the retention period is to be reduced (specification, page 22, lines 20-29).

Claim 70

Claim 70 is directed to the at least one computer readable medium of claim 65, wherein the at least one host accesses the unit of data stored on the at least one storage system using a content address generated based on the content of the unit of data (specification, page 12, lines 31-32, page 13, lines 1-6).

Claim 71

Claim 71 is directed to the at least one computer readable medium of claim 65, wherein the method further comprises an act of sending, from the at least one host, a second request to the at least one storage system to restore the retention period to the length of the previously-defined retention period for the at least one unit of data (specification, page 33, lines 26-30).

Claim 74

Claim 74 is directed to the host computer of claim 72, wherein the request for the at least one host to reduce a length of the retention period for the at least one data comprises an event command indicating the occurrence of an event (specification, page 35, lines 7-11).

Claim 76

Claim 76 is directed to the host computer of claim 72, wherein the request specifies that the retention period be reduced and the manner in which the length of the retention period is to be reduced (specification, page 22, lines 20-29).

Claim 77

Claim 77 is directed to the host computer of claim 72, wherein the host computer is adapted to access the unit of data stored on the at least one storage system using a content address generated based on the content of the unit of data (specification, page 12, lines 31-32, page 13, lines 1-6).

Respectfully submitted,

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Date: September 26, 2007